

**AMENDMENTS TO THE CLAIMS**

**Please cancel claims 1-7, 13-14, 19, 21, 23-25, 31-32, 38-39, 44, 46, 48-51 and 68-76 without prejudice.**

**Please amend claims 8-9, 11-12, 15-18, 20, 22, 26, 30, 33-34, 36-37, 40-43, 45, 47, 52-63 and 77-87.**

1-7. (Canceled)

8. (Currently Amended) A computer-implemented method for integrated modeling and simulation of a biological process comprising a plurality of chemical reactions, the method comprising the steps of:

- (a) constructing a model of the biological process, wherein ~~said~~the constructed model is ~~constructed or modified by instructions~~user commands received through both a graphical user interface and a textual interface that is separate from the graphical user interface;
- (b) generating, using the constructed model of the biological process, dynamic behavior of the modeled biological process during a simulation of the biological process; and
- (c) displaying the dynamic behavior on a display device.

9. (Currently Amended) The method of claim 8 wherein ~~step~~in (a) comprises constructing a block diagram model of a chemical reaction that is part of the biological process.

10. (Original) The method of claim 9 wherein the block diagram model includes at least one block identifying a set of related chemical reactions that are part of the biological process.

11. (Currently Amended) The method of claim 8 wherein ~~step~~in (a) further comprises:

- (i) providing ~~at the~~ graphical user interface for accepting user commands and data;
- (ii) receiving, via the provided graphical user interface, user commands and data; and
- (iii) constructing, using the received user commands and data, a model of the biological process.

12. (Currently Amended) The method of claim 8 wherein ~~step~~-(b) comprises generating, using the constructed model of the biological process, dynamic behavior of the modeled biological process using a stochastic computational model.

13-14. (Canceled)

15. (Currently Amended) An article of manufacture having embodied thereon computer-readable ~~program-means~~instructions for integrated modeling and simulation of a biological processes, the article of manufacture comprising:

one or more computer-readable ~~program-means~~instructions for constructing a model of athe biological process, wherein ~~said~~ the constructed model is ~~constructed or modified by instructions~~user commands received through both a graphical user interface and a textual interface that is separate from the graphical user interface;

one or more computer-readable ~~program-means~~instructions for generating, using the constructed model of the biological process, an expected output of the modeled biological process during the simulation of the biological process; and

one or more computer-readable ~~program-means~~instructions for displaying the ~~dynamic behavior~~expected output.

16. (Currently Amended) The article of manufacture of claim 15 wherein ~~said~~the one or more computer-readable ~~program-means~~instructions for constructing a model of the biological process comprises one or more computer-readable ~~program-means~~instructions for constructing a block diagram model of a biological process.

17. (Currently Amended) The article of manufacture of claim 16 wherein ~~said~~the one or more computer-readable ~~program-means~~instructions for constructing a block diagram model of the biological process includes one or more computer-readable ~~program-means~~instructions for constructing at least one block identifying a set of related chemical reactions.

18. (Currently Amended) The article of manufacture of claim 15 wherein the one or more computer-readable ~~program-means~~instructions for generating a dynamic behavior of the modeled biological process comprises one or more computer-readable ~~program-means~~instructions for

generating an expected result of the modeled biological process using a stochastic computational model.

19. (Canceled)

20. (Currently Amended) A computer-implemented method for integrated modeling and simulation of a biological process comprising a plurality of chemical reactions, the method comprising the steps of:

- (a) constructing a model of a biochemical process in a modeling component, wherein ~~said the constructed model is constructed or modified by instructions~~ user commands received through both a graphical user interface and a textual interface ~~that is separate from the graphical user interface;~~
- (b) analyzing ~~simulation of~~ the constructed model of the biological process to generate a ~~simulation~~ result; and
- (c) transmitting the result to the modeling component, wherein the ~~simulation~~ result is ~~saved in a storage element~~ displayed on a display.

21. (Canceled)

22. (Currently Amended) The method of claim 20 wherein ~~step (b)~~ comprises analyzing the constructed model of the biological process using sensitivity analysis.

23-25. (Canceled)

26. (Currently Amended) A computer-implemented system for integrated modeling and simulation of a chemical reaction comprising:

a modeling component for constructing a model of the chemical reaction, ~~said the constructed model being constructed or modified by instructions~~ user commands received through both a graphical user interface and a textual interface ~~that is separate from the graphical user interface;~~ and

a simulation engine in communication with ~~said the~~ modeling component, ~~said the~~ simulation engine accepting as input the constructed model of the chemical reaction and

generating an expected output based on the model, wherein the expected output is ~~saved in a storage element displayed on a display.~~

27. (Original) The system of claim 26 wherein the modeling component comprises an environment for construction of a block diagram model of a chemical reaction.

28. (Original) The system of claim 27 wherein the modeling component further includes at least one block identifying a set of related chemical reactions.

29. (Original) The system of claim 26 wherein the modeling component accepts user commands and input for constructing the model of the chemical reaction.

30. (Currently Amended) The system of claim 26 wherein ~~said the~~ simulation engine generates the expected output using a stochastic computational model.

31-32. (Canceled)

33. (Currently Amended) A method for integrated modeling ~~and simulation of~~ chemical reactions, the method comprising ~~the steps of:~~

(a) constructing a model of a chemical reaction, wherein ~~said the constructed model is constructed or modified by instructions~~ user commands received through both a graphical user interface and a textual interface ~~that is separate from the graphical user interface;~~

(b) generating, using the constructed model of the chemical reaction, an expected output of the modeled chemical reaction; and

(c) displaying the expected output on a display device.

34. (Currently Amended) The method of claim 33 wherein ~~step-(a)~~ comprises constructing a block diagram model of a chemical reaction.

35. (Original) The method of claim 34 wherein the block diagram model includes at least one block identifying a set of related chemical reactions.

36. (Currently Amended) The method of claim 33 wherein ~~step-(a)~~ comprises:

(i) providing a graphical user interface for accepting user commands and data;

(ii) receiving, via the provided user interface, user commands and data; and

(iii) constructing, using the received user commands and data, a model of the chemical reaction.

37. (Currently Amended) The method of claim 33 wherein ~~step-(b)~~ comprises generating, using the constructed model of the chemical reaction, an expected output of the modeled chemical reaction using a stochastic computational model.

38-39. (Canceled)

40. (Currently Amended) An article of manufacture having embodied thereon computer-readable ~~program-means~~instructions for integrated modeling and simulation of chemical reactions, the article of manufacture comprising:

~~one or more computer-readable program-means~~instructions for constructing a model of a chemical reaction, wherein ~~said the constructed model is constructed or modified by~~ instructions~~user commands~~ received through both a graphical user interface and a textual interface~~that is separate from the graphical user interface;~~

~~one or more computer-readable program-means~~instructions for generating, using the constructed model of the chemical reaction, an expected output of the modeled chemical reaction; and

~~one or more computer-readable program-means~~instructions for displaying the expected output.

41. (Currently Amended) The article of manufacture of claim 40 wherein ~~said the one or more computer-readable program-means~~instructions for constructing a model of the chemical reaction comprises ~~one or more computer-readable program-means~~instructions for constructing a block diagram model of a chemical reaction.

42. (Currently Amended) The article of manufacture of claim 41 wherein ~~said the one or more computer-readable program-means~~instructions for constructing a block diagram model of the chemical reaction includes ~~one or more computer-readable program-means~~instructions for constructing at least one block identifying a set of related chemical reactions.

43. (Currently Amended) The article of manufacture of claim 40 wherein one or more computer-readable ~~program means~~instructions for generating an expected result of the modeled chemical reaction comprises one or more computer-readable ~~program means~~instructions for generating an expected result of the modeled chemical reaction using a stochastic computational model.

44. (Canceled)

45. (Currently Amended) A computer-implemented method for integrated modeling and ~~simulation of~~ chemical reactions, the method comprising ~~the steps of~~:

(a) constructing a model of a chemical reaction, wherein ~~said~~ the constructed model is ~~constructed or modified by instructions~~user commands received through both a graphical user interface and a textual interface that is separate from the graphical user interface;

(b) analyzing simulation of the constructed model of the chemical reaction to generate a simulation result; and

(c) transmitting the result to the modeling environment, wherein the simulation result is ~~saved in a storage element~~displayed on a display.

46. (Canceled)

47. (Currently Amended) The method of claim 45 wherein ~~step-(b)~~ comprises analyzing the constructed model of the chemical reaction using sensitivity analysis.

48-51. (Canceled)

52. (Currently Amended) The method of claim 8 further comprising ~~the step of~~ annotating the model to add user-provided annotations.

53. (Currently Amended) The method of claim 8 wherein ~~step-(a)~~ comprises automatically connecting elements of the model using an auto-connection tool.

54. (Currently Amended) The method of claim 8 further comprising ~~the step of~~ providing a tabular view of the model and a graphical view of the model to the user.

55. (Currently Amended) The method of claim 9 wherein ~~step-(a)~~ comprises constructing the block diagram to include a virtual block that is provided for graphical convenience but that plays no role in the semantics of the model.
56. (Currently Amended) The method of claim 8 further comprising ~~the step of~~ generating a report regarding the model.
57. (Currently Amended) The method of claim 8 further comprising ~~the step of~~ generating code for executing the model.
58. (Currently Amended) The method of claim 57 further comprising ~~the step of~~ distributing the code for distributed execution.
59. (Currently Amended) The method of claim 8 further comprising ~~the step of~~ creating a library from a portion of the model for reuse in another model.
60. (Currently Amended) The method of claim 8 wherein ~~step-(a)~~ comprises using a knowledge base of chemical reactions in constructing the model.
61. (Currently Amended) The method of claim 8 wherein ~~step-(a)~~ comprises enabling a user to specify a rapidity of at least one of chemical reactions of the biological process.
62. (Currently Amended) The method of claim 8 wherein the ~~step-(a)~~ comprises programmatically determining a graphical display that represents the model.
63. (Currently Amended) The method of claim 8 wherein ~~step-(a)~~ comprises constructing a conditionally executed sub-section that is executed upon satisfaction of a condition.
64. (Previously Presented) The system of claim 26 further comprising an annotation tool for enabling a user to add annotations to the model.
65. (Previously Presented) The system of claim 26 further comprising an auto-connection tool for automatically connecting elements of the model.
66. (Previously Presented) The system of claim 26 further comprising a graphical view of the model and a tabular view of the model that are viewable by user.

67. (Previously Presented) The system of claim 27 wherein the block diagram model contains a virtual block that is provided for graphical convenience but plays no role in semantics of the model.

68-76. (Canceled)

77. (Currently Amended) The article of manufacture of claim 40 further comprising one or more computer-readable ~~program-means~~instructions for annotating the model to add user-provided annotations.

78. (Currently Amended) The article of manufacture of claim 40 further comprising one or more computer-readable ~~program-means~~instructions for automatically connecting elements of the model.

79. (Currently Amended) The article of manufacture of claim 40 further comprising one or more computer-readable ~~program-means~~instructions for providing a tabular view of the model and a graphical view of the model.

80. (Currently Amended) The article of manufacture of claim 41 wherein ~~said~~the one or more computer-readable ~~program-means~~instructions for constructing a block diagram model of the chemical reaction includes one or more computer-readable ~~program-means~~instructions for constructing at least one block identifying a set of related chemical reactions.

81. (Currently Amended) The article of manufacture of claim 41 wherein the one or more computer-readable ~~program-means~~instructions for constructing the model of the chemical reactions constructs the block diagram to include a virtual block that is provided for graphical convenience but plays no role in semantics of the model.

82. (Currently Amended) The article of manufacture of claim 40 further comprising one or more computer-readable ~~program-means~~instructions for generating code for executing the model.

83. (Currently Amended) The article of manufacture of claim 79 further comprising one or more computer-readable ~~program-means~~instructions for distributing the code that is generated for distributed execution.



84. (Currently Amended) The article of manufacture of claim 40 wherein the one or more computer-readable ~~program-means~~instructions for constructing the model of the chemical reactions uses a knowledge base of chemical reactions to construct the model.

85. (Currently Amended) The article of manufacture of claim 40 wherein the one or more computer-readable ~~program-means~~instructions for constructing the model of the chemical reactions enables a user to specify a rapidity of at least one of the chemical reactions.

86. (Currently Amended) The article of manufacture of claim 40 wherein the one or more computer-readable ~~program-means~~instructions for constructing the model of the chemical reactions determines a graphical display for representing the model.

87. (Currently Amended) The article of manufacture of claim 40 wherein the one or more computer-readable ~~program-means~~instructions for constructing the model of the chemical reactions constructs the model to include a conditional sub-section that executed upon satisfaction of a condition.